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TITLE: Corrosion of Copper, Aluminium and Iron in Acetic Acid and Ammonium Sulphate Solutions (Korroziya medi, alyuminiya i zheleza v rastvorakh uksusnoy kisloty i sul'fata ammoniya)

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ABSTRACT: In the production of gas from peat, tar waters are obtained which contain certain useful substances such as acetic acid, phenols and nitrogenous fertilisers. In the process of recovering these substances some parts of the equipment are in contact with boiling solutions and/or vapours containing various proportions of these compounds. The object of the present investigation was to study corrosion of Cu, Al and Fe under the actual operating conditions: Temperature = 100-110°C; pressure = 1.1 - 1.2 atm; concentration ≅ 4-14% acetic acid, 4-32% ammonium sulphate, 0.2 - 0.6% volatile phenols. Aluminium "ADIM",

Card 1/4

Corrosion of Copper, Aluminium and Iron in Acetic Acid and Ammonium Sulphate Solutions

copper "MI" and "Armco" iron specimens (the impurities content given in the footnote on p 166) measuring 40 x 20 x 1 mm were cleaned with emery paper and degreased with ether in a Soxhlet extractor. The duration of the corrosion tests was 7 hrs at the boiling point and 244 hrs at room temperature. The rate of corrosion (g/m^2hr) was determined by measuring the loss of weight of the corrosion specimens. Water insoluble corrosion products formed on the Cu and Al specimens were dissolved in 5% solution of H_2SO_4 in the former and 5% HNO_3 + 1% $K_2Cr_2O_7$ solution in the latter case. The results are given in the form of graphs showing the effect of concentration of the active constituents on the rate of corrosion of the investigated metals. Fig.1 shows corrosion of Cu and Al in boiling acetic acid (for the liquid and vapour phase). Corrosion of Fe in the same medium is shown on Fig.2. Fig.3 shows corrosion of Al, Cu and Fe in acetic acid at room temperature, while the effect of boiling

Corrosion of Copper, Aluminium and Iron in Acetic Acid and Ammonium Sulphate Solutions

solution of ammonium sulphate (liquid and vapour) is shown on Fig.4 for Al and Cu and on Fig.5 for Fe. The rate of corrosion of Al, Cu and Fe in acetic acid, which at room temperature remained constant throughout the investigated range of concentrations (up to 15%), was considerably higher at 100°C. At this temperature aluminium is most rapidly attacked by the 1% solution. The rate of corrosion of copper changes little with concentration but corrosion of iron is accelerated when the concentration of boiling acetic acid solution is increased. In the presence of 0.2 - 0.6% phenol the rate of corrosion of Cu and Al in acetic acid is slightly increased while corrosion of Fe is slowed down, sometimes by a factor of 4. Corrosion of Al in boiling solution of ammonium sulphate is comparatively slow when the $(NH_4)_2SO_4$ content is below 10%, the rate of corrosion increasing with increasing concentration. The rate of corrosion of Cu increases up to 10%, remains

KONRADI, M.V.

Corrosion of stainless steels in solutions containing acetic acid, ammonium sulfate, and phenols. Trudy Inst. torfa AN BSSR 7:174-186 '59. (MIRA 14:1)
(Steel, Stainless—Corrosion) (Peat gasification)

KONRADI, M. V., Cand Tech Sci -- (diss) "Research into the corrosion behavior of some metallic materials in solutions of acetic acid containing phenol and ammonium sulfate." Moscow, 1960. 11 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Inst of Non-ferrous Metals and Gold im M. I. Kalinin); 150 copies; price not given; (KL, 17-60, 155)

DAL', V.I.; FINKEL'SHTEYN, P.K.; GOLENDA, V.F.; POPOV, R.I.; PASHKEVICH, A.Z.; KONRADI, V.Ya.

Increasing the size of metallurgical coke by a new method of selecting coal charges. Koks i khim. no.1:22-27 '60. (MIRA 13:2)

1. Dnepropetrovskiy khimiko-tekhnologicheskiy institut (for Dal', Finkel'shteyn & Golenda). 2. Dnepropetrovskiy koksokhimicheskiy zavod (for Popov, Pashkevich and Konradi).
(Dnepropetrovsk--Coke)

KONRADI, V.Ya.; LIFANOV, Ye.V.

Closed circle of the coal washing system. Ugol' Ukr. 5 no.5:22-23 My '61. (MIRA 14:5)

(Coal washing)

KONRADI, Yu.A.

The GShG-1 small-size grab bucket loader. Biul.tekh.-ekon.inform. no.9:7-9 '61. (MIRA 14:9)
(Excavating machinery)